MINING & PETROLEUM STANDARD

AND

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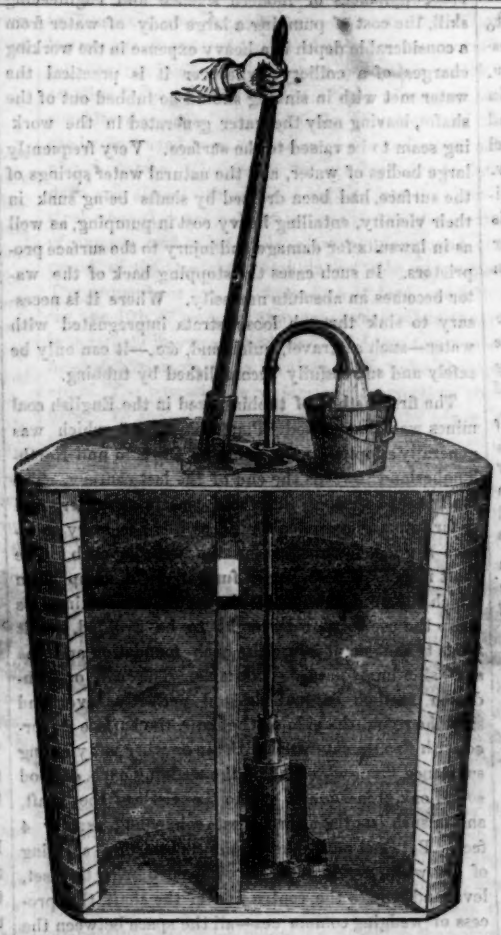

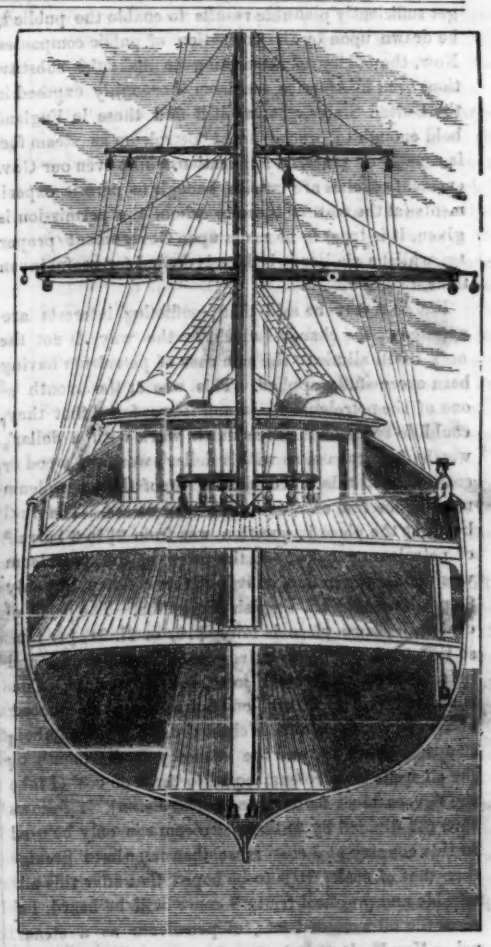

Recommendations of the American Submerged Pump

OWNED BY THE AMERICAN PUMP MANUFACTURING CO., NEW YORK.

OFFICE, No. 40 DEY STREET.

Office of the American Ship Building Company, New York, Oct. 21, 1864.

I am very much pleased with the economy and simplicity of the American Pump, which I have examined with much interest. IT IS ADMIRABLY ADAPTED FOR SHIP PURPOSES, and from its GREAT POWER would do incalculable service in the event of LEAKAGE. It also works well in pumping, where the cargo consists of grain in bulk, and is free in its action.

AUGUSTUS WALKER, Marine Constructor.

New York, October 26, 1864.

To the American Pump Manufacturing Co.:

I have examined with much interest the working and results of the Double Action Force Pump which you are introducing in the market. For use as a Ship Pump and for Mining purposes, I consider it of great value, the results far exceeding anything of the kind presented to my observation, particularly for its GREAT POWER and SIMPLICITY. It will give me pleasure to recommend its introduction into the Navy. Please deliver as soon as possible the Pumps ordered by me last week, for the Mines of the Middlefield Fire and Building Stone Company of Massachusetts, and oblige, Yours, respectfully, CHARLES E. STUART, Consulting Engineer, U. S. N.

Office of the Neptune Iron Works, New York, February 6, 1865.

To the American Pump Manufacturing Co.:

I was very much impressed in examining the Pump manufactured by your Company. The originality of the design is in good keeping with its simplicity of construction—certainly very desirable qualities in all mechanical combinations. The extensive demand is the best proof of the popularity and favor it is receiving from the public. I have no hesitancy in recommending it to the inspection of those wishing THE BEST PUMP in the country.

CHARLES HUBBARD, Jr.,
Superintendent.

Office of Donald McKay,
East Boston, Aug. 15, 1865.

Alvin Walker, Esq., Sec. American Submerged Pump Co.:

DEAR SIR:—In answer to your request for my opinion of your Patent Submerged Pump, will say, that for simplicity, compactness and durability, it has the appearance of being the BEST mechanical combination I have seen, having fitness combined with its simplicity, making it SUPERIOR to Pumps now generally used for general purposes on land. Also, well suited as a Ship Deck Pump, and, in my opinion, can be arranged to be readily used as a good Bilge Pump for Ships.

Yours truly,
HIRAM WINTER.

CAMP PAROLE, ANNAPOLIS, Md., April 22, 1865.

Wm. Numson, Esq., President, Baltimore:

DEAR SIR,—The No. 2 Pump has been properly adjusted, and works to our entire satisfaction. Hoping you may be successful in introducing it to the public, we remain,

Very respectfully, yours, &c.,
JONES & CROWLEY.

(Letter from the President of Board of Common Council, City of Boston)

Boston, August 10, 1865.

A. Walker, Esq., Sec. American Submerged Pump Co.—

Dear Sir—In reply to your request for the results of the trial of one of your Pumps, I will briefly state the purpose for which it was needed, and the complete satisfaction attained. It was desired to clean out a well 42 feet in depth, in which there stood 10 feet of water; I had previously vainly tried several methods, in one of which one large Force Pump and as many buckets as could be used, succeeded in 10 hours in reducing the depth of the water to 9 feet, but beyond that nothing could be gained. I then put in one of your smallest Pumps, which drained the well completely in Six Hours: although the spring which fed the well yielded a stream of water about as large as a man's arm. I need not say that I consider the Pump fully capable of accomplishing what you claim for it. Yours truly, W. B. [illegible]

I can fully endorse the above statement. GH

PETROLEUM.

PETROLEUM AS STEAM FUEL.

SIR,—In is a peculiar and not very gratifying fact that it usually happens in this country that the inventions of least merit receive the largest amount of patronage, whilst really valuable discoveries are altogether neglected. Among the propositions which have recently obtained popularity, although there is not even a probability of its becoming practically valuable, is that for employing petroleum as a substitute for coal in the generation of steam. It is really lamentable to think how little common sense is displayed in the matter, and how much money is wasted in the endeavour to get sufficiently plausible results to enable the public to be drawn upon by the formation of public companies. Now, the fallacy of attempting to make the substitution, even in America, has been thoroughly exposed in the United States, yet we still find those in England bold enough to proclaim that petroleum as steam fuel is capable of practical application, whilst even our Government officials are unwise enough to permit experiments (at the cost of those to whom the permission is given, it is true) to be made upon Government property, whilst a similar privilege is denied for useful inventions.

But as it may be said that conflicting interests are opposed to the change (which, by the way, is not the act), I will allude to the sole case of petroleum having been successfully applied. This was at the mouth of one of the petroleum wells and it was found that they could do twice or thrice as much work with a dollar's worth of petroleum as with a dollar's worth of wood or coal. Is not this a conclusive proof that petroleum must be the fuel of the future? Let us see. The fuel burnt at the place in question was from 2½ to 3 barrels of petroleum per day, and the price of the petroleum was not 2s. per gallon, as it is in this country, but only $2 per barrel, or 3d. English per gallon. The price of coal at the same place is fully $10, or 2l. 2s., per ton so that to obtain the relative cost of burning coal and petroleum we must make some few allowances. Coa is at the English factories one-fourth the price quoted above, whilst petroleum is eight times the price; then as 4 times 8 are 32, and the economy at the mouth of the oil wells is petroleum equal to three of coal (I take the figures most favourable to petroleum), it follows then (32 divided by 3) that petroleum can only be used in this country at a cost more than ten times greater than that of coal. It is to be hoped that after this admirable and practical trial no more will be heard, beyond the oil-well districts, of petroleum as a steam fuel.—*New York, Oct.* 1. R. S. H.

WATER FOR PARIS.

The great aqueduct has been constructed to supply the water of the river Dhuis to the new reservoirs lately completed on the heights of Menilmontant, in Paris. On the 11th inst., at 1·40 p.m., the waters were let into the basin, but some days must elapse (during which the conduits will receive their first cleaning), before the regular supply is distributed to the service-pipes of the town. The aqueduct takes its rise in the Commune of Parquy (Aisne), and traverses the departments of Aisne, Seine et Marne, Seine et Oise, and Seine, the length of its course being 84 miles, thus composed:—Portions constructed in masonry, with regular inclinations of 1 in 10,000, in length 74 miles; syphons or forced conduits of cast iron, crossing the valleys, with a fall of 24·8 in. per mile, 10 miles. About 6 miles of the aqueduct in masonry have been executed in tunnel, the principal ones being those of Montmartre, Montretout, Montceaux, and Quincy, which are from 700 to 2,200 yards long. The principal syphons are those of Petit Morin, Grand Morin, the Marne, and Villemouble which are from 1,100 to 4,000 yards in length, with from 180 to 210 ft. of Sagitta. The works were commenced on 20th June, 1843, and the first water introduced for trial on 2d August last. The total cost is 6,000,000*l.*, including the purchase of land and factories.

MINING.

ON THE TUBBING OF SHAFTS.

BY MR. EDWARD HEDLEY.

The tubbing of shafts is becoming a very important branch of mining, and its application more momentous than formerly. Collieries and other mines of great depth will hereafter be sunk as those now in work are exhausted; these will either be in new undrained districts, or through the mines already worked to others below; in each case large feeders of water will have to be pumped or tubbed back. With all the best appliances of modern science and engineering skill, the cost of pumping a large body of water from a considerable depth is a heavy expense in the working charges of a colliery; wherever it is practical the water met with in sinking should be tubbed out of the shafts, leaving only the water generated in the working seam to be raised to the surface. Very frequently large bodies of water, and the natural water springs of the surface, had been drained by shafts being sunk in their vicinity, entailing heavy cost in pumping, as well as in lawsuits for damage and injury to the surface proprietors. In such cases the stopping back of the water becomes an absolute necessity. Where it is necessary to sink through loose strata impregnated with water—such as gravel, quicksand, &c.,—it can only be safely and successfully accomplished by tubbing.

The first method of tubbing used in the English coal mines was that called "Plank Tubbing," which was generally adopted in the mines of Durham and Northumberland towards the end of the last century. The shaft is sunk through the strata containing water, and so far into an impermeable bed as it is necessary to secure a good foundation for the wedging-curb. The shaft is sunk a few yards further for a sump from which the pumps may take the water—in sinking this sump the use of powder ought to be avoided, as it tends to shake and injure the curb foundation and the shaft side immediately contiguous. The seat, or foundation, is then cut and dressed perfectly level and smoothe round the side of the shaft, the surface covered with flannel, saturated with tar or other soft yielding substance, upon which is laid the wedging-curb, of good sound oak, 9 in square, cut to the circle of the shaft, and in such lengths as are most convenient, usually 4 feet. Between each joint of the curb a thin sheeting of dry white deal is inserted. The curb being thus set, level and true to the centre line of the shaft, the process of wedging commences—all the space between the back of the curb and the solid stratum around the shaft is filled in with blocks of wood, the end of the gram being presented upwards; these blocks are then wedged with hard dry pine wedges until another wedge cannot be inserted. The object being to make the curb water-tight, so that no water can possibly find its way down the shaft behind the curb. Until the wedging is all completed the water running down the sides of the shaft should be caught above, and the curb and wedges preserved as dry as possible. If necessary, the curb joints, with the sheeting in them, should also be wedged; this, however, is seldom necessary, as the tendency of the back wedging is to tighten them. Above the wedging-curb, and at a distance equal to the length of the tubbing-plank, is fixed the spiking-curb, set true and securely wedged with the double wedges. On the inside of this curb planks are arranged, 3 in. wide, and 10 ft long, the joint edges are all planed and bevelled to the circle of the shaft, so as to form a water-tight barrel or casing; the upper ends are spiked to the curb with iron nails or pins—copper nails have, however, been used in preferance where the water corroded the iron. The curbs of oak, 6 in. square, with splice-joints, are next fixed inside the planks to strengthen and support them—indeed the main strength of the tubbing is due to these curbs, and the distance that they are placed apart is regulated by the pressure that has to be resisted. Successive lengths of tubbing thus constructed succeed one another until the whole of the weak strata are passed, the top of the highest length is surmounted by another wedging-curb, made water-tight in the same way as the one at the bottom. The ordinary walling of the shaft is built upon this upper curb. On the inside of the inner, or counterfort curbs, 1 in. boards are nailed to complete the shaft ready for work. Plank tubbing thus constructed has stood for several years under a pressure of about 100 lbs. on the square inch, but the decay of the wood, induced by the corrosive action of the water on the tubbing spikes, has in many cases weakened the tubbing, and it has been replaced by the modern cast-iron segments. A modification of the plank tubbing is frequently used with great advantage in sinking through wet alluvial strata.

The trouble, expense, and insecurity of the plank tubbing led to the use of solid wood in place of the planks. The preparatory operation of laying foundation curb, &c., for this tubbing is in every way similar to that already described for plank tubbing. Upon the curb is built the blocks or curbs cut to the circle of the shaft, and of oak or elm 8 in. square, and of any convenient length. Sheeting of ¾ in. deals is inserted in every joint, in all cases the end of the wood being toward the inside of the shaft. To steady the building as it progresses, the space behind the curbs is filled with soil, small coal, sand, or ashes, compressed and made as solid as possible. The shaft is thus lined above the highest point to which the water will rise, and the shaft walling built upon it. The whole of the joints in the tubbing are then wedged until the shaft is quite dry. In several of the continental coal mines a modification of this system of tubbing is still employed with great success. Instead, however, of the shafts being circular, they are usually a polygonal form—the tubbing blocks being straight, with the joints bevelled to the radii of the shaft. All the joints are sheeted, as in the English method, the vertical joints are, however, in the same line, that being at each corner of the polygon. Solid wood tubbing, properly constructed, and of good, sound, hard wood, will last for many years, and resist a pressure of from 200 to 300 lbs. per square inch. In shafts, where the pressure of water is inconsiderable, and the diameter does not exceed 8 or 10 ft., wood tubbing may be still used with more advantage than cast-iron, especially in upcast shafts, where the gases from the furnace act upon the iron, and where the water tubbed back is also destructive to iron.

At the time that plank tubbing was being extensively used (1795) experiments were made with a view to the use of cast-iron for tubbing shafts. The first attempt was made with cylinders cast 6 feet long, and of the diameter inside the size of the shaft, with flanges projecting outwardly. These cylinders were placed one above another, and the joints being sheeted, were afterwards well wedged. Great inconvenience was experienced in getting these cylinders into their place, owing to the obstruction of pumps, &c., it was also found impossible to cast them sound and true. Within the last 50 years several large shafts have, however, been sunk through wet alluvial strata successfully by a sinking tub formed of cylinders of great weight, which descended by their gravity as the sand, gravel, &c., were removed from the interior. When employed in this way the flanges of the cylinders project inwardly. The disadvantages attending the use of these large cylinders led to the dividing of them into segments, the first castings of which were made with the flanges projecting towards the centre, and were bolted together when in their proper position in the shaft. Wood curbs were fastened to the tubbing flanges, and sheeting-boards nailed to them to finish the shaft safe for drawing the coal, in the same way as in the lining for plank tubbing. This rendered cast iron tubbing very costly, and in several cases solid wood tubbing was used at this period as a cheaper and sufficiently strong casing. A few years later, however, the present ordinary form of cast-iron segments was introduced by the late Mr. John Buddle, at Howdon Colliery, near North Shields.

In the Rhenish-Prussian mines, when the pressure of water is not great, the shafts are frequently walled or tubbed by a wall of cement blocks of about 2 feet in

thickness, and set with hydraulic mortar. This cement is manufactured from trass—a conglomerate of pumice stone, basalt, and calcined slate—as also is the mortar in the proportion of equal quantities of cement and quick lime. A few years ago an attempt was made to introduce cement tubbing in the English mines, but it was found to be impracticable to use it in deep shafts of large diameter, owing to the great thickness of walling required to resist the pressure, and its liability to destruction by the furnace gases. With a few minor exceptions, the former plans of shaft tubbing have all been superseded by the present system of tubbing with cast iron; the strength, durability, and efficiency fully compensate for its extra cost in construction, and when the feeders of water are strong, and the column heavy, no other than cast-iron tubbing can be applied with success.—*London Mining Journal.*

MINING IN MEXICO.

The last advices received in Paris from Mexico state that mining operations continue to be prosecuted on a great scale. The Mint of Mexico struck 400,000 piastres in July. The new Guanajuato Company has just inaugurated the works of the Villapando Mine, from which great results are anticipated. In Lower California, a French company, named La Marie, has already derived important profits from the argentiferous bearings of San Juan. The last steamer which arrived at New York from California brought 25 bars of silver, of the greatest purity, from this mine. Railways, roads, and telegraphs, are also being actively prosecuted in the new Franco-Austrian empire, in which French influence appears to have acquired a more solid footing than ever; while Juarez, the native leader, is a mere fugitive and the United States have such a crop of internal troubles on their hands that the Monroe doctrine is practically laid on the shelf for the present. After all, the French intervention into Mexico can scarcely fail to be attended with beneficial results in that part of the world. The one great need of Mexico has been public order and tranquillity, and this great blessing has been secured under the sway of the Austrian Archduke, for whom the Emperior Napoleon has so mysteriously provided a Mexican throne.

COPPER MINING IN NEW SOUTH WALES.

Before the end of this month a very large engine, that has been erected at the Cadiangullong Copper Mines, will be completed and started, when a marked increase in the production is anticipated as there is a considerable accumulation (fully 2000 tons) of ore on the surface ready for the crushing machine. Additional furnaces have also been built, and the lodes are improving in quality and extent. The engine now erected is of 40 horse power, and the boiler is one of the largest in the colony.

During the last year upwards of 200 tons of refined copper have been produced and shipped—and in the ensuing year we may look forward to this branch of enterprise receiving an impetus from the success attending the operation of these mines. The establishment at Cadianguilong gives employment to upwards of 300 people.—*Sydney Herald.*

A COAL DIGGING MACHINE.

A coal-digging machine has been exhibited at Pittsburg, Pa. The machine has, on one side, a double engine, which may be worked with compressed air or steam. The cylinders are ten inches in diameter, with a seven and a half inch stroke. The power is used to drive a series of cog-wheels which communicate with smaller cogs connected with eleven pairs of augers.—These augers are three feet six inches long and two and three-quarter inches in diameter each. At the end of each is a drill, which tapers from a diameter of two and a half inches to a double point. The width of the whole set of augers is four feet seven inches. When in the mine the machine rests upon a small track, along which it is propelled by its own power. Above this track is a pair of trams on which the machine slides backward or forward as the auger penetrates the rock, or are withdrawn, all the motions being performed by the machine itself. It is calculated that fifty per cent. of the labor now necessary to take coal out of the pit will be performed by this digging machine. Its bearing in power will be from five thousand to eight thousand bushels of coal in ten working hours.

PREVENTING OXIDATION OF IRON AND STEEL.

According to the patent of Mr. J. B. Chambeyron, of Paris, it is proposed to prevent the oxidation of iron and steel by the forced incorporation of volatile metals having little affinity for oxygen. Tinning, zincing, and leading only give incomplete results, and Mr. Chambeyron has discovered that it is only by incorporating into the iron itself, and to a certain depth, a metal or an alloy little affected by the action of oxygen, and considered practically inoxidisable, that iron and steel can be protected from oxidation in sea and other acidulated waters. The means he employs are to introduce zinc alone in the state of vapour into the iron or steel when they are only to be exposed to the contact of oxygen, and to a volitile alloy or compound composed of tin, lead, and zinc in suitable proportions. The proportions are about one fifth of lead, one-fifth of tin, one-fifth of zinc, but they may vary when the iron is to remain in corrosive waters. A high temperature being necessary to vaporize the metals to be incorporated. The operation is performed in cementing chambers. To each of the cast iron heads of the upper retorts is adapted a tube, the lower extremity of which is immersed in the retort, and the upper extremity is terminated by a funnel, which has underneath a spheroidal reservoir, furnished above and underneath with a tap for shutting off communication either with the retorts or with the interior of the reservoir. The metals to be incorporated are poured in a state of fusion into this funnel, whence they fall into the retort, the high temperature of which converts them very quickly into vapour. In case the pressure obtained by the vapour is not strong enough to produce the incorporation, he caused a part of the gas to flow from the gasometer where it is held in reserve, into the retorts. When the metallic vapours have been incorporated in the pores of the iron and steel they will be condensed there by a lowering of the temperature, which is preceded by the introduction of a certain quantity of borax, which by its volatilisation in the apparatus will fix the incorporated metals. The retorts will then be opened, after having ascertained by means of a pyrometer that the temperature has fallen below that at which the volatillization of the most volatile metal takes place.

SCIENTIFIC MISSION TO GREECE.

M. Millet, a member of the Paris institute, has reported to the Emperior Napoleon the result of a scientific mission to Greece, undertaken by him last year, in obedience to imperial order. The Island of Thasos, visible from Mount Athos, contains a vast number of unexplored remains of towns, theatres and temples, and M. Mollet was fortunate enough to find these several works of art which had escaped destruction at the hands of the peasants, who, seeing Europeans so anxious about large stones, imagine them to contain treasures, and therefore, not unfrequently break them into small fragments in the hope of finding some. This was the case with a splendid bas-relief, representing a woman in a sitting posture, and holding a casket in her hands. On the frieze the words "Philis, daughter of Cleomedes," were sculptured. The Islanders had broken this beautiful work of art into ten pieces, and then having found no treasure in it as they hoped, had fortunately thrown them into a corner of a warehouse, where M. Millet discovered them. The fragments, put together, revealed the beauty of the composition, and the head having escaped injury, the whole was shipped off to France, together with three bas-reliefs representing Apollo, Mercury and eight of the Muses, each bearing articles connected with the toilet, and dressed in long robes with small folds, and diadems of pearls on their heads, the pearls represented by grains of some metal. These bas-reliefs are about three feet high and eight in length, and bear inscriptions in the old Ionian dialect. Besides these, M. Millet sent over five bas-reliefs, two of which represent funeral banquets, and the three others heroes on horseback; also forty marble slabs bearing inscriptions, many of which are of the time of Alcibajos.

GAS.

PURE OXYGEN AS A MEANS OF INCREASING ILLUMINATION.

Our readers are all acquainted with the increased power of illumination given to a jet of gas, by feeding the flame with pure oxygen. By thus intensifying the combustion of the particles of carbon in the flame to a certain extent, their illuminating power becomes largely increased—if the supply of oxygen is too great the carbon enters into so perfect a state of combustion as to lose its irradiating power. This has for a long while been a favorite experiment with Professors in their courses of lectures, but we are not aware, says the *Eclairage au Gaz*, that they have ever recommended its practical application. A company has been formed in Paris, having for its object the furnishing of pure oxygen to consumers through pipes and mains in the same manner as ordinary illuminating gas. The oxygen gas prepared at their works will be preserved under a pressure of four or five atmospheres, and conveyed in pipes to dwelling houses and places of consumption, where it will be confined in gasometers for the special purpose. Separate pipes must be arranged so that the oxygen will only come in contact with the carburetted hydrogen at the orifice of the burner, *thus rendering an explosion impossible.*

The cost of the oxygen to the company will be fifty centimes—one-half franc—per cubic metre, the inventor expecting to reduce it to thirty-five centimes. It will be furnished to consumers at one franc fifty centimes, possibly one franc twenty five centimes per cubic metre. During some years past that the Drummond light has been so much used, oxygen obtained from chlorate potassa, has cost sixteen to eighteen francs per cubic metre.

In an economical point of view experience has shown that it requires hourly sixteen litres per one candle-light—by introducing one litre oxygen only two litres carburetted hydrogen are needed per hour and per candle. Mr. Archereau, the inventor, thus promises to the public a saving of 40 to 50 per cent.

The introduction of oxygen into the flame of carburetted hydrogen is also a matter of interest as a point of hygiene. The combustion of illuminating gas has the same effect upon the atmosphere as the respiration of a human being—oxygen is absorbed, and carbonic acid and other deleterious substances produced. This is avoided by oxygenating the flame from the interior and the air preserved pure and unvitiated.

GAS EXPLOSION IN ENGLAND.

A short time since an explosion occurred at the London Gas Company's Works, Nine Elms, which caused a serious loss of life, and destroyed much valuable property. The works are situated in Nine Elms lane, close to the workshops of the South Western Railway Company. On the eastern side, extending half the length of the works, was a range of low one-story buildings, used as workshops by carpenters, blacksmiths, meter-makers, and also for store-rooms, light offices, and counting-houses. On the opposite side of the yard was a lofty building, used as a retort house. Between these two ranges of buildings was a large gas-holder some 150 feet in diameter. Immediately to the south of this was a new building, just erected for a meter house, 80 feet in length by 30 feet in width, with a handsome iron roof. About 100 yards to the south was another gas-holder of the same dimensions, each being calculated to hold 1,000,000 cubic feet of gas. A number of plasterers were engaged plastering the interior of the new meter house. Suddenly, without the slight-

est warning of danger, the new meter house became a ruin, and the northern gas holder exploded with a roar like a salvo of artillery, while a column of lurid flame shot high into the air, carrying with it the fragments of the iron plate forming the telescopic portions of the gasometer.

The southern gas-holder afterwards took fire and burnt out, but without further damage. Nine of the sufferers are dead, and about twelve seriously injured.

For more than a quarter of a mile from the gas-works, in a south-easterly direction, every house and building is more or less damaged, while those in the immediate vicinity of the explosion, especially in Haward street, Radley-terrace, and Penton Road, are rendered for a time uninhabitable. In the first named street, the doors and windows have been battered in, the tiles torn from the roofs, and the plaster and paper on the walls and ceilings completely stripped—in several cases the ceilings have fallen in.

The way in which the disaster occurred is not yet understood—perhaps it never will be. It is thought by some, however, that the gas escaped into the meter house, through some damage to the governor, and that an explosion there drove in the side of the gas holder, and permitted a sufficient admixture of air to enable the contents of that to explode also. Another supposition would be, that some defect in the gas holder had allowed of the entrance of air to it—but this does not seem so likely. A full inquiry will, of course, be made before the Coroner.

NITRO-GLYCERINE.

In the Mechanics' Magazine, an account was given of some Swedish experiments with that highly explosive compound, nitro-glycerine, which Mr. Nobel, a Swedish engineer, is endeavoring to bring into use, instead of gunpowder, for blasting purposes. The blasting oil, as Mr. Nobel calls it, has since been experimented with in Cornwall, with very satisfactory results. It is an oily fluid, of a light yellow color, and of 1·6 specific gravity. It consists of three atoms of nitric acid, or $3\,NO_5$, combined with one atom of glycerine or $C_6\,A_5\,O_3$, so that its ultimate composition may be represented by $C_6\,H_5\,O_{14}\,N_3$. It bears the temperature of boiling water without explosion or injury, but explodes at about 360° Fahrenheit. The changes which occur during explosion convert each volume of it into 469 volumes of carbonic acid, 554 volumes of steam, 39 volumes of oxygen, and 236 volumes of nitrogen, being a total of 1,298 volumes of gas for each volume of the liquid oil. The gases produced by the explosion of gunpowder, measure, when cold, only 250 times the bulk of the gunpowder exploded, so that, supposing the gases evolved to be in each case at the same temperature, nitro glycerine would thus be five times more effective than its bulk of gunpowder. A great deal more heat, however, is generated by the explosion of nitro-glycerine than by the explosion of gunpowder, and the gases produced by the explosion of the former are therefore in so much higher a state of tension than those produced during the explosion of the latter, that the new agent is really thirteen times more effective, bulk for bulk, and eight times more effective, weight for weight, than the old. The use of nitro-glycerine in blasting, therefore, enables thirteen times more disruptive force to be applied, by means of a hole of a given size, than can be brought to bear by means of a bore of the same dimensions when gunpowder is used, and one result of its substitution for gunpowder, for blasting purposes is thus a very great economy of labor. When there are rents in the rock in which the bore is made, the advantage of nitro glycerine over gunpowder is greater than thirteen to one, amounting, indeed, to between twenty and thirty to one, by reason of the explosion of nitro-glycerine being so much more rapid than that of gunpowder that the force of its explosion is not appreciably diminished by fissures in the bore, which would diminish the effective force of an explosion of gunpowder by fifty per cent. For the same reason, "tamping is never required, a shaft of loose sand being sufficient in all cases. Hence, accidents in charging are impossible, besides the saving in time."—Other advantages of nitro-glycerine are, that, "being insoluble, discharges under water or in water-carrying rocks may be effected by it without cartridges; and, as the blasting oil can only be exploded under certain conditions, and by means of igniters manufactured specially for the purpose, its storing and transport involve no danger." Curiously enough, contact with fire is not sufficient to ignite it at ordinary temperatures, neither is contact with phosphorus, or even with potassium.—The chief danger in its use is from its intensely poisonous qualities, but these can be effectually guarded against without much trouble. At present nitro-glycerine is more costly than gunpowder, in about the proportion in which it is more effective, so that, for charges of equal force, nitro-glycerine and gunpowder cost about the same. The saving of labor and time which results from the use of the former, however, renders it by far the more economical agent of the two.

THE CHOLERA AND WATER.

The Registrar General, in his return for the past quarter, just issued, says:—"It is gratifying to know that London and some of the other large towns are now in a far better condition to encounter the epidemic that they were either in 1848-49 or in 1853-54, when the disease killed 55,181 and 24,516 persons of both sexes and of all ranks in England and Wales. Cholera, like small-pox, is one of those zymotic diseases which exist in all climates. Under favorable conditions their products assume an active form, capable of inducing in other bodies the same morbid changes by which they were generated. For all practical purposes it may be assumed that the discharges of patients in the epidemic, either casually touching the mouth, or entering in dust and vapour through air or water, induce diarrhœa or cholera in a certain proportion of those exposed to their influence. Now London was supplied with the sewage water of a river by several companies in 1848-49; all except one got their water beyond the reach of the London sewage in 1853-54; and the mortality fell proportionately as the water became purer. At the present time the water of all the companies is comparatively little contaminated by zymotic pollution. The London pumps have also been placed under inspection. The drainage is in rapid progress. Analogy justifies the hope that, as the city is purified, and as the means of diffusion are cut off, the destructiveness of the disease will be diminished. The epidemic has hitherto commenced generally about October, and has only proved excessively fatal in the following summer. Thus all our towns have six month's notice and the whole winter for the preparation of defensive works. Every district in the kingdom should at once appoint its health officer."—*London Builder.*

DESULPHURISING ORES.

An improved furnace, invented and patented by Mr. Alfred Monnier, has been adopted at the chemical works of Mr. Frederick Klett, at Camden, New Jersey, and it is stated that the result has been that the extraction of the precious metals has been more complete, the waste less, and the profit greater. The ore is calcined with from 10 to 12 per cent. of sulphate of soda, in a muffle furnace, 80 feet x 6 feet; about 3½ tons are worked off in 24 hours, employing four workmen, and consuming 900 lbs. of anthracite coal. Charge is put in at the rear end of the muffle, and gradually worked down to the front of the furnace, where it is discharged. The copper then exists in the form of a soluble sulphate, and the iron as an insoluble oxide. After lixiviation, the residue (oxide iron) contains no trace of copper, and, as shown by chemical analysis, never more than 1-10th of 1 per cent. of sulphur. In the case of auriferous pyrites, the gold remains with the iron in the residue in a condition adapted for amalgamation, and can be readily saved by that process, to within 5 per cent. of the amount shown to exist by assay.

DECEPTIVE GEMS.

A rough and worn surface in gems is no sure test of antiquity, for Italian ingenuity has long discovered that a handful of newly made gems, crammed down a turkey's throat, will, in a few days, by the trituration of the gizzard, assume a roughness of exterior apparently produced by the wear and tear of many centuries. "In a word," says Mr. King, "though faith may be the cardinal virtue of the theologian, distrust ought to be that of every gem-collector." Here is another species of fraud. Antique stones bearing inferior intagli are worked over again by Italian engravers, so that an apparently antique intaglio of good style is produced. The safeguard here is to examine the entire intaglio with a lens, when, if a fraud has been perpetrated, some portions of the work will be found to possess a higher and fresher polish than others, while the design will be sunk to an unnatural depth in the stone. Setting aside the question of art, the truest test of antiquity, in Mr. King's opinion, is a certain degree of dullness, like the mist produced by breathing on a polished surface. This appearance he believes cannot be imitated by any contrivance of the modern forger. Another satisfactory proof is afforded when the engraving appears to have been executed almost entirely by the diamond point. Modern gems have been principally cut with the wheel, a minute disc of copper, rapidly revolving, and charged with diamond dust. In this operation the cutting apparatus is fixed, while the gem to be engraved is cemented on a handle, and is pressed against the wheel. Under the ancient method it remained motionless, like an etcher's plate, while the operator, working with his diamond point, had all the freedom of hand which the etcher possesses.

A FEAT IN BOILER-MAKING AT HARTLEPOOL.

The screw steamer Wearmouth, the property of the owners of Usworth Colliery (a firm, the principal members of which, we believe, are Mr. Elliott, Houghton-le-Spring, of Transatlantic cable fame, and Mr. Jonassohn, of Sunderland,) is being fitted up with new boilers—under high pressure, at least as to the speed with which they have been constructed. The result has been one of the most expeditious piece of boiler-making we have heard of in the district. Within 16 days from the boiler plates being put into the hands of a batch of efficient workmen, under the superintendence of Mr. George Duncan, an experienced Clyesdale manager, at the Hartlepool Ironworks, the boiler was completed, tested with 48 lbs. to the square inch water pressure, and again with 25 lbs. steam ditto, and declared perfect. Persons who know anything of boiler making or who have observed the labor incident to building a boiler 13 fet 4 inches, by 13 feet 6 inches, by 10 feet 6 inches, adapted to a marine steam engine, to be heated with four furnaces, will know that this is indeed a feat of rapid execution—and it is creditable alike to foreman and workmen to say that the work has been done by time, and not by "piece."—*Stockton and Hartlepool Mercury.*

HOW RED HAIR FOR LADIES IS OBTAINED IN PARIS.

It is the fashion in Paris to have red hair the color of the Empress. How the brunettes accomplish this is thus explained:—At the appointed hour the candidate for golden honors enters the dressing-room in a long white dressing gown. Her hair floats loosely over her shoulders. The artist begins by separating every hair. Then he pours over the hair a phial of "water" (probably a deadly poison.) He saturates the hair. This occupies two hours. After fifteen minutes he soaks the whole hair in ice water. He then kneads the hair with his hands. Again ice water is applied. The "gooses" are moved within a few feet of the hair and it turns red. The whole operation lasts five hours, and leaves the lady with red hair, an intolerable headache, mangled nerves, and $80 less in pocket.

SPOTS ON THE SUN.

Mr. F. Brodie, F. R. A. S., writes concerning the "spots" which were visible on the sun in England during the latter end of September, saying:—To those who are not familiar with the nature of these so-called "sun spot" I would remark that the term "spot" is rather an unhappy one; it gives the impression of being a mark on a flat surface. It is really an enormous hollow, with sloping sides, penetrating entirely through the photosphere of the sun—the black part, or "umbra," being at the bottom—and is supposed to be the real body of the sun. On September 28, this black part of the spot was rather more than nine thousand miles in length, while the greatest length of the opening formed by the sloping sides, or penumbra, was about twenty-nine thousand miles. These sides were very deeply furrowed from top to bottom, very similar to watercourses cut by the torrents in descending steep slopes of a mountain. The sides terminated at the bottom in long, narrow promontories of luminous matter, stretching on the umbra something like a comb having thick teeth. One of these promontories measured fully one thousand miles long. On the morning of the 30th of September, similar changes were taking place with great rapidity, so much so that in two or three hours the shape of the spot had greatly altered. The main part of the umbra had extended to about eleven thousand miles in length, while the penumbra had shortened to about twenty-four thousand miles.

IMPORTANT NOTICE.

To Advertisers.—Our paper offers a superior medium as an advertising agent, to all those who manufacture or sell machinery or appliances of any kind for Gas, Mining, Water, Sewerage, the production or purification of Oils, &c. &c., not so much on account of a wide-spread circulation, as from the fact that it goes directly to the hands of those who are constantly using and requiring machines and improvements for these branches, and who look through our columns for information where to procure them. The class of people who read our paper not only peruse our pages of reading matter, but read the advertisements as well, for the reason that they are directly interested in all things pertaining to their business. We therefore ask, with confidence that we can do them justice, all parties having machinery or improvements of any kind for either of the objects to which our paper is devoted, to send in their advertisements and avail themselves of these advantages. It will be observed that our terms for advertisers are very reasonable.

GOLD-SAVING MACHINERY IN COLORADO.

The Black Hawk Journal thus mentions a new apparatus for saving gold:

We hear of a new-fangled arasta on Mill Creek. Working on surface quartz, it gets $300 per cord where a stamp-mill only gets $80. Half a ton of stuff is put in at night and the same in the morning, and running by water—that is all the attention it requires. It is built in an octagonal form, and in each angle beyond the circuit made by the mullers is a quicksilver riffle, where the gold is caught. In every view of the case, this ought to be termed a neat little arrangement. No quicksilver is lost or wasted, it does not cut nor flour, not coming in contact with the grinding surface at all. We should like to see Clear Creek lined with such machines, and there is no reason why it should not be. Their construction and use are cheap, and they do the work handsomely. Mr. Blackburn, the man who is running the one of which we speak, and who is an experienced mill-man and engineer, says that he has been equally successful in treating ore as quartz He has been running steadily for almost six weeks.

Detection of Fire-Damp.—It appears that Mr. G. F. Ansell, to whose invention reference has already been made, has just returned from a visit to several collieries in the North, where he had an opportunity of practically testing his Indicator. The success is complete; the instrument has proved in practice capable of detecting and indicating in a manner intelligible to the meanest collier the presence of even 1 per cent. of fire-damp in any given spot in the pit. The objection which was raised to Mr. Ansell's invention—that after the instrument had once been acted upon by a fouling of the atmosphere the pointer would not return to its original zero—appears to be groundless. In practice the indication is made as frequently as required, even if it be several times in a minute; and after each indication the pointer returns to its normal position, ready to indicate afresh. The indicator is used with quite as great facility, and requires no greater care in its use than the Davy lamp, but there is this important difference, that whilst the lamp will not indicate less than a dangerous quantity of fire-damp, the "Osmose Indicator" will give visible evidence of the most minute contamination with the destructive gas. *English Paper.*

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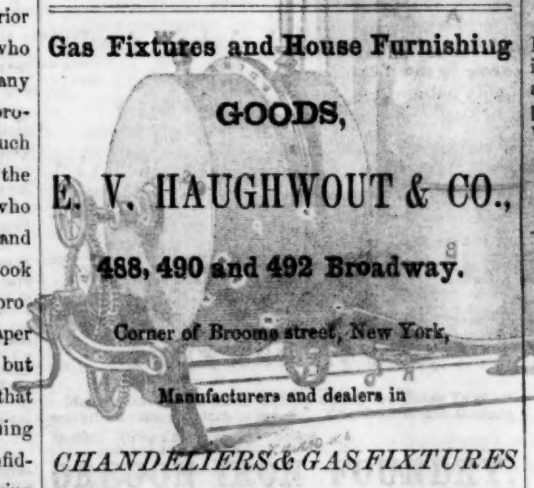

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Six years in general use in works using it, to the exclusion of all other fluid, and driving the dry meter out of use, enables us to recommend the patent with perfect confidence.

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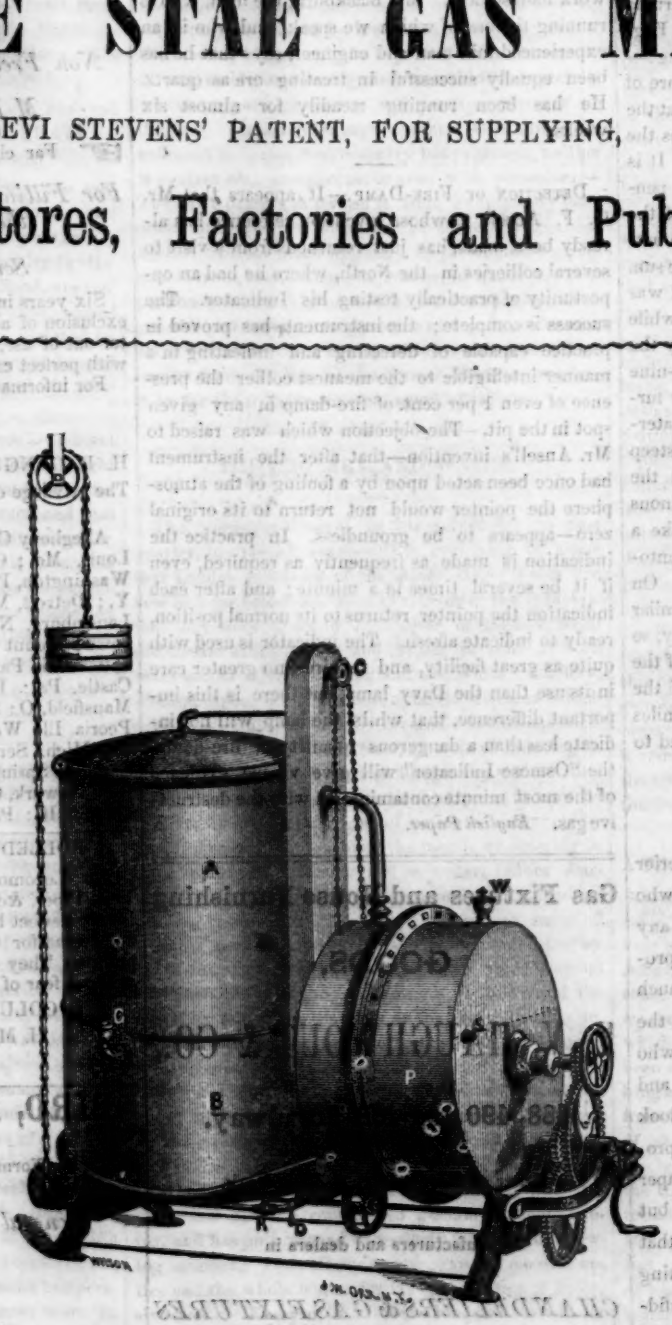
Is a mixture of the vapor of hydro-carbon with common air. The mechanical devices employed are such as, from a long experience and critical examination into the nature of the elements brought into use, seem best adapted to secure a certain and satisfactory result. GASOLINE, the liquid employed, is the more volatile portions of Petroleum, of a specific gravity of 0.6587. This liquid exposed to the action of the machine is vaporized, and a close mechanical mixture of the vapor with common air is effected. The value of the gas produced, its permanency, its illuminating quality, and freedom from liability to condensation, depend almost entirely upon the perfect and uniform character of this mixture. Hence the great importance of mechanical means adapted to secure all the conditions requisite in a Portable Gas Machine.



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This machine will produce the most brilliant and steady light, without Fire or Heat, and is warranted to operate in every respect as represented.

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We warrant our Glycerine free from acid and not to corrode the Meter metal, or to congeal or freeze at a stated temperature—also, not to evaporate to any extent The advantages and savings derived from the use of our fluid can be testified by many Gas Light Companies which we have supplied. We only refer to the certificates of H. J. Miller, Esq., President of Cincinnati G. L. and Coke Co., and Dr. J. Lawrence Smith, Professor of Chemistry in the Louisville College, and President of the Louisville Gas Co.

HARTMAN & LAIST,

Office No. 71 Main street, Cincinnati —Chemical Works on Providence st, and Miami Canal, near Findlay st.

CERTIFICATE

Office Louisville Gas Co, Louisville, June 28, 1865.

This is to certify, that the Louisville Gas Co. have used for about two years, the Glycerine prepared by Messrs. Hartman & Laist of Cincinnati, in their Wet Meters, and have in all instances found it to give most perfect satisfaction. Prior to the use of the above Glycerin, we had employed that manufactured by other parties, and we consider H. & L.'s superior to any we used.

J. LAWRENCE SMITH, President.

Office Cincinnati Gas Light and Coke Co., July 7, 1865.

This will certify, that Messrs. Hartman & Laist of Cincinnati, furnished this Company with Glycerin for Wet Meters some two years since. It has proved very satisfactory, having resisted the action of frost during two winters and evaporating not more than six per cent. per annum, as guaranteed by them. The standard being, for density, 15 deg. Beaume's scale. They were the first to introduce it practically to this Company. H. J. MILLER, President.

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AND OTHER PURPOSES.

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We have been engaged in Manufacturing Glycerin the past 8 years, and from our advantage in material and the large amount we make, are enabled to offer it lower than any manufacturer in this country. Finding the wide range that Glycerin would assume in Pharmacy, the Arts and for mechanical purposes, we have entered into the manufacture of articles adapted to the various uses and are now prepared to offer it adapted to every purpose for which it can be used as less than any article now in competition with it. We annex the following letter from S. S. Stratton, Esq., to show practically its advantages.

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Messrs. W. J. M. Gordon & Co.:

Dear Sirs,—It affords us great pleasure in testifying to the superiority of the Glycerin Fluid purchased from you for filling the Wet Meters now in use by the Covington Gas-Light Company.

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I have had it in constant use for the past four months, and during that period the thermometer has ranged as low as 14o below zero, and after careful examination, I have found the fluid in the same condition as when first put in the Meters, and without the slightest discoloration.

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In fact, I can cheerfully recommend it as being cheaper and better than any other Fluid or Mixture now in use.

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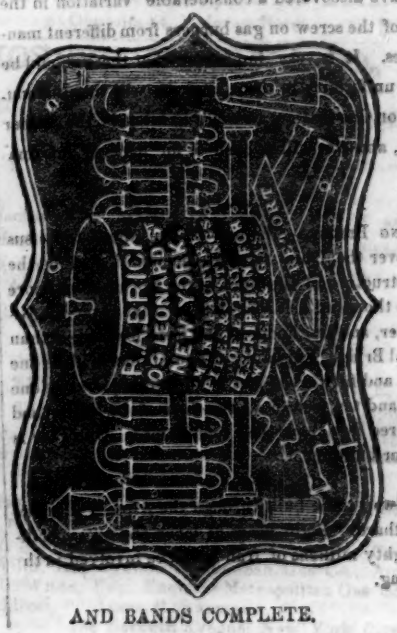

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Prof. C. ELTON BUCK, Consulting Chemist.

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AGENTS.

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☞ *Private Office, No.* 111 *Pearl street.*

☞ *Publishing Office, No.* 1 *Spruce street.*

The Mining and Petroleum Standard

AND

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 2D AND 16TH OF EVERY MONTH.

JAMES W. BRYANT, DR. C. W. TORREY, } Editors.

SATURDAY, DEC. 2, 1865.

☞ We shall have twenty or thirty vols. of our last year's issue bound, which we will furnish to subscribers at $3 each, or non-subscribers at $4.

☞ Our subscribers would confer a favor upon us by remitting *checks, or Post Office Money orders*, as we are frequent losers by money sent by mail.

TO GAS BURNER MANUFACTURERS AND GAS FITTERS.

We have discovered a considerable variation in the thread of the screw on gas burners from different manufactories. It is very important that there should be perfect uniformity in them, and we will thank Manufactures or Gas Fitters to write us what is the proper standard, and we will publish it for general information.

A Long Bridge.—The new bridge about to be suspended over the Ohio river at Cincinnati, will be the longest structure of the kind in the world, being more than two thousand feet longer than that over the Niagara river, and five hundred and forty feet longer than the Menai Bridge, England. Its total span will be one thousand and fifty-seven feet. The stone piers rise one hundred and ten feet above the floor of the bridge, and two hundred feet above their foundations. One year is allowed for building it.

A Railway to be built through the Alps by the pas of St. Gothard. Eight years of labor and an expenditure of eighty millions of francs will be involved in the undertaking.

NEW SCHOOL OF MINING AND PETROLEUM GEOLOGY.

We have received the circular of a new School of Mining and Petroleum Geology, opened in connection with Harvard College. The full course will occupy four years, though students may enter at any time upon giving satisfactory evidence of ability, and paying the necessary fees, or may enter special courses of lectures, if not candidates for a degree.

We give a list of the faculty and extract the following:

FACULTY.

Thomas Hill, D.D. LL.D. President.
Asa Gray, Professor of Botany.
Joseph Lovering, Professor of Physics.
Henry L. Eustis, Professor of Engineering.
Josiah D. Whitney, Professor of Geology.
Wolcott Gibbs, Professor of Chemistry.
Josiah P. Cooke, Professor of Mineralogy.

In the department of Geodesy, the student will be instructed in the following branches: Topographical drawing; the use of portable astronomical instruments for determination of geographical position; Projection of Maps, and all operations connected with either the hasty reconnoisance, or the more careful surveys, of large districts.

In the department of Geology the general principles of the science will be fully taught in one course of lectures, while another will be devoted to the subject of the structure of the North American Continent, with particular reference to the geological position and mode of occurrence of our useful rocks, minerals, and ores. The object of metalliferous veins will also receive especial attention, both as regards the economical relations of the various forms and the theories of their origin.

A course of lectures in Physical Geography, with practice in the use of instruments for meteorological and hypsometrical observations, will form a part of the course of instructions in this department.

In the department of Mining and Metallurgy, great pains will be taken to give instruction in methods and processes actually in use in this country, and the whole course will be so arranged as to give it an especial practical value to those who intend to devote themselves to the development of the mineral resources of the United States.

MINING IN ALGERIA.

The French Societie Generale pour Favoriser le Commerce et l'Industrie, is about to contribute actively to the realization of projects matured by the Government for promoting industry and commerce in Algeria. By its influence a company pursuing the working of bearings of magnetic iron has been re-organised. This enterprise, constituted now with a capital of £600,000 possesses a considerable importance, and we shall take in opportunity of recurring to it, says the London Times.

An antiquarian discovery of much interest hos been made in Fife, Scotland. On the wall of a cave were found sculptured the forms of elephants, birds and fish It is supposed that in the early ages o Christianity the cave was used as a place of worship by anchorites, and that St. Adrian dwelt in it.

Cab-fare Indicator.—At the Birmingham Industrial Exhibition, the first prize, of the value of 25l., has been awarded to Mr. Peter Gaskell, inventor and patentee of a cab-indicator, which shows the distance the cab goes, and the amount the passengers have to pay. Two of them are said to have been in use about eight months, and have proven a protection to the proprietor.

An immense bridge is being built over the Rhine, between Mannheim and Ludwigshaven, to be completed in October, 1867. Each of the arches is to be two hundred and eighty-five feet wide and the bridge to contain a roadway for carriages, a line of railway and a pavement on each side for foot passengers.

R. H. Allnatt, the Sussex (England) meteorologist, has been making observations on the deposition of dew during foggy nights, the result of which is a conclusion that in his neighborhood, at all events, the amount of dew deposited in four nights was equal to a ton and a half per acre.

Plumbago from the Cape of Good Hope.—Large discoveries of this valuable mineral are stated to have been made in the inland districts of the Cape of Good Hope. A sample of eight bags has already been shipped to England, in order to test its value in the home market.

By order of the King of Sweden experiments with submarine infernal machines are about to be tried on the old ship-of-the-line Charles XIII.

The silver mines of Konsberg, in Norway, are so far exhausted that the quantity of ore extracted will soon not suffice to cover the expenses of working.

In Europe, Asia, Africa, and Australia there are 52 submarine cables, which are of the aggregate length of 5,625 miles, and the insulated wires of which measure 9,783 miles. The longest of these is 1,550 fathoms, and the shortest 1½ fathom. There are 95 submarine cables in the United States and British North America, which measure 68 miles, and their insulated wires 133 miles.

PETROLEUM REVIEW.

17.—Crude is dull and heavy at 31½ to 32 cts. Refined in bond is firm at 52½ to 54 cts. Refined, free, is dull at 70 to 72 cts.

18.—The demand has been fair, and the market a shade firmer, sales of Crude at 32 cts. Refined in bond, 53 to 54 cts. and do. Free 70 to 72. cts.

20.—Crude has been in moderate demand and steady at 32 to 33c. Refined is firm and in fair demand at 52 to 55c., the latter rate for white, and 70 to 72 for free.

21.—The market is very dull, and prices are nominal. we quote Crude at 31½ cts. Refined in bond, 52 to 54 cts. and do. Free at 70 to 73 cts.

22.—The market is dull, and prices are nominal at 32c. for Crude; 52c. for Refined in bond, and 70c. for do. free.

23.—The market is quiet, but prices are without essential change. We quote crude at 31½ to 32 cts. Refined in bond at 52 to 54 cts. and do. Free at 70 to 71 cts.

24.—The market is inactive and prices are nominal at 32c. for Crude, 50 to 52c. for Refined in bond, and 70 to 71c. for Refined free.

25.—There has been only a moderate inquiry for Crude during the past two or three days, owing to the scarcity of vessels to load for Europe, prices were weak and at the close heavy at 31½ to 32c. Refined in bond is scarce, in demand and firm, closing at 52 to 54c. Free oil is quiet at 70 to 72c. At Philadelphia there were twelve vessels loading for Europe.

27.—Receipts to-day, 3,721 bbls.; the market is heavy and lower; we quote Crude at 32c.; Refined in bond, 52½ to 53., and do free, 71 to 73c.

28.—The market for Crude is dull and heavy at 31½ to 32 cts. Refined in bond is firm at 53½ to 54 cts. Refined free is inactive at 70 to 72 cts.

29.—The market is moderately active, and firm at 32½ to 33c. for Crude; 53 to 55c. for Refined in bond, the latter rate for White, 71 to 73c. for do. free.

Architectural Iron Works,

13th and 14th streets, near Avenue C.

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H. M. BAILEY, Superintendant of Works.
J. WALTER CLARK, Accountant. J. M. DUCLOS, Arch.

THOMAS CASSIDY,

Iron Founder & Pattern Maker

Corner Hudson and Park Avenues,

BROOKLYN.

Iron Store Fronts put up at short notice.

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A large assortment of Railing Castings constantly on hand, or made to order, at the shortest notice.

Lamp Posts—Brooklyn Pattern.

☞A large stock of the usual sizes of Round Columns kept on hand.

A MINING SUPERINTENDENT WANTED,

To take charge of a large bituminous coal property, now mining three hundred tons of coal per day, with facilities for increasing the production to one thousand tons per day—one thoroughly acquainted with bituminous coal mining and capable of directing and taking the full supervision of such an establishment—must be a good accountant and correspondent, and understand the business in all its branches—to such a one, who must come well recommended, a lucrative position can be given. Address, with name, residence and references, stating salary expected and where last employed, L. H. S., box 456 Post Office, New York.

☞London Mining Journal, please copy.

NEW YORK MINING EXCHANGE.

NEW YORK, Dec, 1, 1865.

	Bid.	Asked		Bid.	Asked
Copper Stock.			**Gold Stock.**		
Aztec	7		Benton	1	1¼
Bedford	1	1	Consol'd Gregory		28¾
Boston	4¼	5	Corydon	—	3
Caledonia, A. P.	10	12	Gunnel	3¾	4¼
Canada	3¼	4	Great Western	—	8
Carp Lake	8	5	Hope	—	9
Central	—	—	Isaac's Harbor	¼	¾
Columbian	—	24	Manhattan	—	9
Copper Falls	—	—	Mariposa	44	44¼
Clifton	—	81	Montana	¾	1
Dacotah	—	5¾	New York	2¾	3
Derby	⅞	1¾	N. Y. & Nova Scotia	⅝	1¼
Douglass	—	—	Quarts Hill	9¼	10
Evergreen	18¾	20	Quicksilver M'g Co	81	82
Flint Steel River	12	13¾	Rocky Mountain	—	10½
Frue	3¾	5	Smith & Parmelee	7	12
Grand Portage	—	—			
Hancock	12¾	14	**Coal Stocks.**		
Hamilton	—	6	American	98	100
Hilton	5	6	Ashburton	—	25
Hudson	1	2	Central	62	65
Huron	32	33	Cumberland	61	62
Indiana	8¾	9¼	Del. & Hud. Canal	206	208
Isle Royale	—	—	Hampshire & Balt.	104	110
Keweenaw	—	6	Pennsylvania	213	215
Knowlton	—	16			
Lafayette	1	2	**Lead Stocks.**		
Manhattan	—	—	Bucks County	⅝	⅞
Mendota	—	—	Clute	1¾	1⅞
Merrimac	4¾	5¾	Erie	—	20
Minnesota	33	37	Macomb	3¾	4
New York, A. P.	2	3¼	Plancentia Bay	1¾	1¾
N. J. Consolidated	4	4¾	Sussex	¾	¾
Norwich	—	6	Wallkill	3¾	4
Ogima	5	6¼			
Ontonagon	3	4¼	**Iron Stocks.**		
Penn	—	11¾	Copake	8	10
Providence	1¾	—	French Creek	¾	1
Quincy	96¾	—	Teal Lake	4¾	6
Reliance	1¾	—			
Rockland	12¾	—	**Miscellaneous.**		
Superior	8¾	—	Rutland Marble	17	20
Sharon	—	—			

* Ex. div.

CAMERON COAL.

The Cameron Coal Company are now prepared to receive orders for the delivery of their

☞ *Very Superior Bituminous Coals,*

At Elizabethport and other points. It is remarkably free from Sulphur, and suitable for the purposes of Gas Companies, Locomotives, Steam Engines, Iron Manufacturers, and other parties requiring a very superior fuel.

For terms, apply at the office of the Company, Empire Buildings, No. 71 Broadway, Room 33, New York City.

Experimental Trial of Cameron Coal Company's Coal, from "Mount Hope" Vein,

Made at the Philadelphia Gas Works, March 20th, 1865, Charges, 100 lbs. each.

Pounds of Coal carbonized,.....3,600
Cubic feet of Gas made,.....16,285
" " per lb. Coal carbonized, 4·52·100
Coke made, in pounds,.....2,430
" in bushels,..... 63
Tar made, in gallons,..... 22
Illuminating power, 5 feet Batwing—14 44·100 Candles.

No. 34 Pine Street, New York, April 5, 1865.

George Warren, Esq., President Cameron Coal Co.:

Dear Sir—The analysis of the Coal I received from you, as from your "Mount Hope" vein, results as follows:

Volatile matter,.....26.00 per cent.
Carbon (of Coke),.....69.40 "
Ash,..... 4.60 " —100.00

The volatile matter consists of crude oil, ammoniacal water, and gas. The crude liquor product amounted to 14 gallons per ton; the illuminating Gas, 4,522 cubic feet per 1,000 lbs. coal. The Coal weighs 65 lbs. per bushel. The Coal is remarkably free from sulphur, and the Gas of excellent quality.

Yours, very truly,

(Signed,) A. K. & S. C. EATON, CHEMISTS.

Manhattan Gas Light Co., New York, April 24, 1865.

Mr. George Warren, President Cameron Coal Co.:

Dear Sir—The result of the examination of the Coal from the "Mount Hope" vein is as follows:

One ton (2,240 lbs.) yielded 2,500 cubic feet of 15·75 candle Gas, and 40 bushels of coke, weighing 1,550 lbs. The Coke has a good appearance, and burns very well, with but little hard clinker. Had the Coal been fresh mined, the result would have been better.

Analysis of the Coal.

Volatile matter,.....29.00 pr. ct.
Fixed carbon,.....67.20 "
Ash,..... 3.80 " —100.00

Analysis of the Gas.

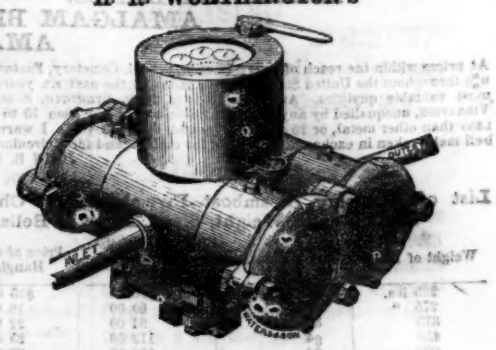
Olifiant Gas, hydro carbon vapors, 4.75 pr. ct.
Carbonic oxide,..... 8.75

Yours very respectfully,

(Signed,) JOS. A. SABBATON, ENGINEER.

ADVERTISEMENTS.

H. R. WORTHINGTON'S



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with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

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OIL TUBING, CAST IRON DRIVING PIPE, Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

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A Gas Engineer of thirteen years experience, desires a re-engagement. He refers, by permission, to Chas. Roome, Esq., President Manhattan Gas Co.; F. T. Willis, Esq., President Savannah Gas Co.; Ambrose L. White, Esq., Engineer Metropolitan Gas Co. Address, JAMES R. SHEPHERD, 131 186 Seventh Avenue, New York City

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At prices within the reach of every Church, School, Cemetery, Factory, or Farm in the land. Their use throughout the United States and Canadas for the past six years has proven them to combine most valuable qualities. Among which are TONE, STRENGTH, SONOROUSNESS, and DURABILITY OF VIBRATION, unequalled by any other manufacture. Sizes from 15 to 5,000 lbs., costing TWO-THIRDS LESS than other metal, or 25 cents per pound, at which price I warrant them twelve months. Old bell metal taken in exchange, or bought for cash. Send for a circular to the manufacturer,

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Weight of Bells.	Diameter.	Price of Bells without Hangings.	Price of Patent Hangings.	Price of Bell and Hangings complete.
225 lbs.	36 inches.	$256 00	$15 00	$271 00
275 "	42 "	69 00	18 00	87 00
375	36	94 00	22 00	116 00
450	84	112 00	25 00	137 00
600	02	150 00	30 00	180 00
750	89	188 00	35 00	225 00
1,000	44	250 00	42 00	292 00
1,200	48	300 00	45 00	345 00
1,400	50	350 00	50 00	400 00
1,600	52	400 00	54 00	454 00
1,800	55	450 00	60 00	510 00
2,000	58	500 00	62 00	562 00
2,500	60	625 00	72 00	697 00
3,000	63	750 00	85 00	835 00
3,500	66	873 00	87 00	962 00
4,000	69	1,000 00	100 00	1,100 00
4,500	72	1,125 00	113 00	1,238 00
5,000	75	1,250 00	125 00	1,375 00

List of Prices, Weights, and Sizes of Farm, Hotel, Steamboat, Schoolhouse, Shop, and Factory Bell.

These Bells are fitted with Yoke, Standard's Crank and Bolt, complete for use.

Weight of Bell and Hangings.	Diameter.	Cost of Bell and Hangings complete.
15 lbs.	7 inches.	$3 75
20	8	5 00
35	10	8 75
50	12	12 50
75	14	18 75
100	16	25 00
150	18	37 50
200	20	50 00
250	22	62 50
	24	

Larger Sizes made to Order at 25 cents per pound.

Guarantee.—All Bells sold at the above prices WARRANTED against breakage by fair ringing, for TWELVE MONTHS from time of purchasing. Should one fail, a new bell will be given by returning the broken one.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York.

In case a Bell breaks after the expiration of the Warrantee, I allow HALF PRICE for the old metal.

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AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings, prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce it its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, ouge, and emery, being better and cheaper.

This Paint requires no more oil than red lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half-Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

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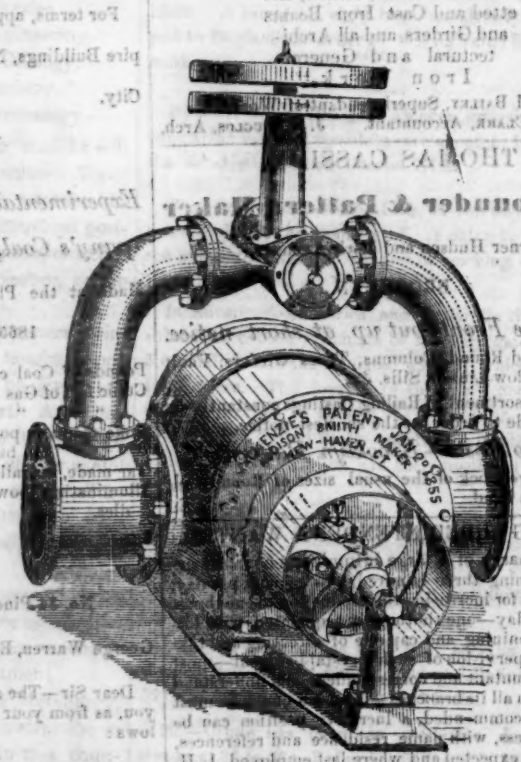

They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the ... tion and illuminating power of the gas, and add very much to the durability of the retorts, ... clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durcleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

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The Blower is a Force Blast machine, durably built, and can be driven with one-third the p required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 ons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cen uel. Address

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Retorts, Bench Castings, Condensers, Washers Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gas holders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks; Exhausters, Steam Pumps, Boilers and Tanks, Steam & Hand Air Pumps for providing Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Lime Sieves for Purifiers, Purifier Holding Machines, &c., &c.

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GREAT WESTERN CONSOLIDATED
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LITTLE KANAWHA & ELK RIVER,
61 Cedar street, [$6,000,000.]
O. E. Wood, Pres. J. Wadsworth, Sec.

OIL CITY PETROLEUM CO.
8 Pine street, [$500,000.]
D. S. Duncomb, Pres. C. C. Pinckney, Sc

PACIFIC COAST PETROLEUM CO.
71 Broadway, [$5,000,000.]
J. De Peyster Ogden, Pres. L. Benton, Sc

RATTLESNAKE OIL TRACT PET. CO.
69 Wall street, [$5,000,000.]
J. P. G. Foster, Pres. A. L. Purves, Sec.

RYND FARM PETROLEUM CO.
8 Broad street, [$2,000,000.]
S. J. Macy, Pres. J. F. Jenkins, Sec.

SECOND NATIONAL PET. CO.
100 Broadway, [$3,000,000.]
M. S. Frost, Prest. J. M. Bruce, Jr., Tr

TARR FARM PETROLEUM CO.
61 Cedar street. [$3,000,000.]
J. Wadsworth, Pres. C. W. Ware, Sec.

UNITED REPUBLIC PET. CO.
74 Broadway, [$2,500,000.]
E. J. Lowber, Pres. J. H. Kidder, Secy.

UNITED PETROLEUM FARMS CO.
10 Pine street. [$10,000,000.]
G. H. Bissell, Pres. J. P. Hogarth, Sec.

VIRGINIA & OHIO PETROLEUM CO.
61 Broad street. [$1,000,000.]
B. Schleffelin, Pres. H. Siebeer, Sec.

WINONA PETROLEUM CO.
8 William street. [$1,000,000.]
J. N. Tappan, Pres. J. D. Fish, Treas.

WEST VIRGINIA OIL & COAL CO.
71 Broadway, [$3,000,000.]
A. F. Ball, Pres. F. A. Miller, Sec.

Great Improvement
IN
Sewing Machines.
EMPIRE
SHUTTLE MACHINE!

Patented February 14th, 1860.

Salesroom, 536 Broadway.

This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.

It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather o the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbert.

Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is

Emphatically a Noiseless Machine!

PRICE OF MACHINES,
COMPLETE:

No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete. - - - $60
No. 2 Small Manufacturing, with Extension Table, $75
No. 3. Large Manufacturing, with Extension Table, $85
No 3. Large Manufacturing, for Leather, with Rolling Foot and Oil Cup, 100

One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably Cash on delivery.

T. J. McARTHUR & CO.,
536 Broadway.

WILCOX & GIBBS SEWING MACHINE

It is entirely noiseless.
A patented device prevents it being turned backward.
The needle cannot be set wrong.
It received the Gold Medal of the American Institute in 1863.
Send for a circular containing full information, notices from the press, testimonials from those using the machine, &c.

JAMES WILLCOX,
Manufacturer, 508 Broadway, New York
Principal Offices:
NEW YORK—508 Broadway.
BOSTON—328 Washington street.
PHILADELPHIA—720 Chestnut street.
CHICAGO—188 Lake street.
CINCINNATI—70 West 4th street.
LONDON—135 Regent street.
HAMBURG—44 Hermann street.
PARIS—82 Boulevard de Sebastopol.
ST. PETERSBURGH—15 Gorochovay.
VIENNA—9 Wildpretmarket.
BRUSSELS—12 Rue Croisade.
SYDNEY, AUSTRALIA—292 Pitt street

GAS-BURNERS.

T. G. ARNOLD,
MANUFACTURER OF
GAS-BURNERS
And Importer of Scotch Tips,
224 and 226 West 21st street,
Formerly No. 447 Broome St., New York.
Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

C. GEFRORER,
Manufacturer of
GAS-BURNERS,
For Lighting and Heating Purposes.
GAS HEATING AND COOKING APPARATUS; TUYERE ROVING APPARATUS, &c.
529 Commerce st., bet. Market & Arch, Philadelphia.

WOODEN PURIFYING TRAYS
PATENT
Conically Slotted Solid Wood Sieves
FOR GAS PURIFIERS.

The Conically Slotted Solid Wood Tray or sieve was patented 31st October, 1862, and all persons are cautioned against purchasing them of any other person except the subscriber. The following companies are now using these trays.

Manhattan, New York,
Metropolitan,
New York
Albany,
Troy
Brooklyn, L.
Williamsburgh,
Citizens
Baltimore Md.
Louisville, Ky.
Chicago, Ill
Cambridge,
And others

Orders received by mail or otherwise.
JOHN L CHEESMAN,
147 Avenue C New York City

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.
J. D. WEST & CO.,
No. 40 Cortland street,

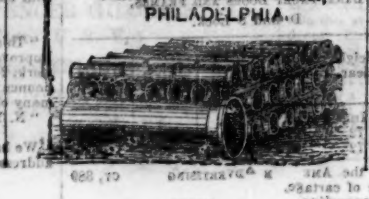
JOSEPH LENNIG,
1615, 1617, and 1619 Francis St.,
Above Ridge Avenue, Philadelphia, Pa.,
MANUFACTURER OF
WET & DRY GAS METERS,
STATION, SHOW, & EXPERIMENTAL METERS,
Photometers, Pressure Registers, Indicators, and Gauges, Governors Meter Provers, Centre Seals, Fluid Gauges, &c.
GAS APPARATUS
Of the most reliable and approved construction manufactured and on hand at the
UNION GAS METER WORKS.

D. PARRISH, Jr.
GAS ENGINEER
And Contractor for Coal or Oil Gas Works.
Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.
205 1-2 Walnut st., Philadelphia, Pa.
Box 1956, Post Office.
To Manufacturers of Petroleum Gas.
For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.
Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

TO GAS COMPANIES.

THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to daily test, inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.
CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works.
417 Walnut st., Philadelphia.

THE AUBIN
GAS-WORKS COMPANY,
Of Albany, N.Y.,
Now contract their works to make 10,000 feet of good Gas from 2,000 pounds of *hard* wood and 40 gallons of kerosene tar, *before payment can be demanded;* and the charcoal is worth the cost of the wood.
Many Village Gas Companies can be referred to.



R. D. WOOD & CO.,
MANUFACTURERS OF
CAST-IRON PIPE, RETORTS, &c
Office, 400 Chestnut Street,
PHILADELPHIA.

Carrington & Co.'s
GENERAL
PURCHASING
AGENCY,
In Connection with all the Expresses,
No. 30 Broadway,
NEW YORK.

Established 1854.

Purchases to order ANY article wanted from New York, (or from Europe,) for ladies' or gentlemen's use or wear,—comfort or luxury—from a cameo to a cashmere—a sea ring to a steam-engine.

Goods purchased at current City prices, and forwarded by Express, or as directed.

Commission, Five Per Cent.

Remittances, with orders, can be made by Express if preferred, as all Express Agents will take orders, receipt for and forward funds, and see to return of Goods.

SPECIAL CIRCULAR.

The Adams Express Company, appreciating the need of a capable medium connecting with the various Express Lines, through which personal and other orders for goods from this city, can be satisfactorily supplied, do recognize CARRINGTON & CO.'S GENERAL PURCHASING AGENCY as such a medium for filling orders for every description of goods wanted from New York, and commend it to the attention of the public, and of our general and local agents, recommending our agents to extend to it all reasonable aid, by facilitating the distribution of its cards and circulars, and making known the advantages it affords.
ADAMS EXPRESS CO.
By W. B. DINSMORE, Prest.
NEW YORK, June, 1864.

We cheerfully concur in the above recommendation of the Adams Express Company.
AMERICAN EXPRESS COMPANY,
By HENRY WELLS, Prest.
UNITED STATES EXPRESS COMPANY,
By D. N. BARNEY, Prest.
WELLS, FARGO & CO.,
NATIONAL EXPRESS COMPANY,
By J. A. ULLEN
HARNDEN EXPRESS,
By L. W. WISCHESTER, Supt.
KINSLEY & CO.'S EXPRESS,
By E. LITTLEFIELD, Supt.
HOPE EXPRESS COMPANY,
A. D. HOPE, Supt.
BREESE & CO.'S EXPRESS,
By STEPHEN BARNUM, Supt
NEW JERSEY EXPRESS COMPANY,
By GEORGE R. DUNN, Sup

The Greatest Improvement yet in the Sewing Machine Art!

A CURIOSITY WORTH SEEING!

Please send for circular with sample of sewing.

These Improved Machines save ONE HUNDRED PER CENT. of thread and silk, and make the LOCK-STITCH alike on both sides.
They require no instruction to operate perfectly, except "the printed directions."
No change in sewing from one kind of goods to another.
And no taking apart to clean or oil.
Our NEW MANUFACTORY is now complete, with all its machinery and tools entirely new, and is already rapidly turning out Machines which for BEAUTY and PERFECTION of FINISH are not surpassed by any manufacture in the world.
N. B.—Should any Machine prove unsatisfactory, it can be returned and money refunded.
Agents wanted in counties not passed by our own agents.

Finkle & Lyon S. M. Co.
No. 533 BROADWAY, NEW YORK.

ROBBINS' PATENT GAS AND WATER JOINT.

The Proprietors of this unrivalled joint are now prepared to introduce it to general use, and to guarantee that, in all respects, it will fulfil perfectly all the requirements of either water, gas, or steam. It is a joint which remains in all situations absolutely tight.

The following illustrations, will give a good idea of the improvement.

For further information, or for prices and terms, which will be very reasonable, apply to

R. C. ROBBINS & CO., No. 218 FULTON STREET, NEW YORK.

LILLIE'S

CELEBRATED

Chilled and Wrought Iron Safes,

WROUGHT IRON FIRE-PROOFS,

LOCKS AND VAULT DOORS.

These Fire-Proofs are manufactured to supply a demand for Security Against Fire, less expensive than my celebrated and superior Chilled and Wrought Iron Burglar and Fire-Proof Safes.

They furnish similar and equal security to the Safes generally manufactured in the different cities, but are Supreme to them in their Fire-Proof qualities and durability, the iron being effectually rotected from rust in any climate, and the Fire-proof not subject to lose its utility by age. This is an important advantage gained to the purchaser, as Safes often rust out and become worthless in wo or three years.

To substantiate my position, those purchasing these Fire-Proofs are at liberty, by giving me due notice of time and place of trial, to test them by fire with any other Safe of the same size; and should they not prove superior, I will refund the money, or a new Fire-Proof, as the purchaser may decide.

LIST OF SIZES & PRICES OF WROUGHT IRON FIRE-PROOFS

No.	Outside. Height.	Width.	Depth.	Inside. Height.	Width.	Depth.	Price.
6	40	31	27	31	21	15	$150
5	34	21	26	24	21	14	125
4	31	27	23	22	18	13	110
3	30	24	24	21	15	13	100
2	28	22	23	20	14	12	75
1	24	19	20	17	11	10	50

Sample of Fire-Proof Safe at Office of the Am. Ad. Agency, 389 Broadway, N. Y.

PRICE LIST.

LILLIE'S CELEBRATED CHILLED & WROUGHT IRON SAFES.

BANK, FIRE, AND BURGLAR SAFES.
Folding Doors, D Lock.

No.	Outside. Height.	Width.	Depth.	Inside. Height.	Width.	Depth.	Price.
	In.	In.	In.	In.	In.	In.	
1	66	56	29	54½	39	18	$850
1½	50	50	26	48	39	15	800
2	39	41	27	32½	33	15	600

MERCANTILE F AND B SAFES.
Folding Doors and Monitor Locks.

3	50	42	27	40	32	18	$500
4	40	42	27	30	32	16	450
4½	38	46	27	28	36	16	450
5	42	68	27	31½	27	15	650

Single Doors and M. Lock.

6	36	35	26	27	23½	15	$250
7	34	31	26	24	21	14	200
8	31	28	24	21	18	13	175
9	30	24	24	21	15	12	150
10	26	22	22	19½	13½	12	120
11	24	20	18	17	17	10	100

HOUSE SAFES

SIDE BOARD	$300
DINING ROOM	250
PANTRY (No. 1)	275
PANTRY (No. 2)	150
DUODECAGON BANK LOCK	100
MONITOR SAFE do.	50
SAFE do.	10

NATIONAL BANK SAFES,
With 2 Inside Burglars and 1 D and 2 M Locks.

No.	Outside. Height.	Width.	Depth.	Inside. Height.	Width.	Depth.	Price.
	In.			In.	In.	In.	
1	68			55	39	18	$1,200
2	61			48	39	18	1,050
3	57			42½	33	18	900

BANK VAULT BURGLAR SAFES,
With Folding Doors and D Lock.

0	68	59	27	64	45	20	$1,000
0½	61	53	27	55	46	20	800
1	57	47	27	49	40	20	600

BANK VAULT BURGLAR SAFES,
Single Doors and D Lock.

2	53	32	26	49	28		
	42	36	22	38	32	19	
4	36	31	20	32	27		
5	30	24	18	26	20	14	

BANK VAULT DOORS AND FRAMES,
D and 8-Lock.

No.	Height clear.	Width clear.	Depth adjustable.	Price.	Weight.
	In.	In.	In.		
1	72	27	20	$400	3,000
2	72	27	20	275	1,500

Orders received and filled at net cash prices, by the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York. All Safes shipped from Troy free of cartage.

Business Depart., E. ALVORD. Corresponding OWLER

WEST'S IMPROVED PUMP.

Anti-Freezing, Double-Acting, Forcing, and Lifting

These Pumps have now been in general use a number of years, and give better satisfaction than any other, and are recommended as

THE BEST!

by CAPTAIN ERICSSON and other eminent engineers. We can refer to thousands using them, a guarantee that all will recommend them. They are more simple in construction, and work easie and cost less than all others.

"Our readers will find the double acting, improved pump of J. D. West & Co., one of the best the market. It is very simple, works to a charm, so that any child may use it; it flows a steadcontinue us stream, and does not freeze in the coldest exposures, and is unusually cheap. We sa this know ingly, and give the testimony of our own accord, without the knowledge or request of the proprietor."—*New York Evening Post, July 1st*, 1863.

"J. D. West & Co.: We are pleased to state that the Pumps we had of you about a year ago, have been in constant use, twelve hours each day, and raise for the use of our woolen factory, about 130 gallons per minute. They work with but little power, compared with pumps we have used before, and do not get out of repair, and are satisfactory in all respects.

"DUNLAP MANUFACTURING CO."

Solon Robinson to the Farmers' Club. Jan. 28.

"No farmer who owns a well or cistern can possibly afford to be without an iron pump. It should be a once a suction and force pump—a perfect little fire engine—such a one known as 'West's Improved Pump.' I speak of this Pump because I happen to know it.... to be very simple, durable, powerful and cheap, and it don't freeze up, nor get out of order once a year.... I know this, and think I may be doing the farmers good by speaking of it.... A boy ten years old can work it, and throw a continuous inch-and-a-quarter stream.... It can be made to work in deep wells as well as ni shallow ones."

"The undersigned having to use "West's Improved Pumps," cheerfully recommend them as simple, durable, and powerful in raising and throwing water, and for their ease of action, security against frost, and low price, we believe them superior to all others.

"WARREN LELAND, Met. Hotel, N. Y.
"J. W. POMEROY, Yonkers, N. Y.
"JOHN MESSERBEAU, N. Y.
"DOMINICK LAWRENCE, Westchester."

From the New York Observer.

"We have had in use for months past one of West's Pumps, which has given us more satisfaction as a force and lifting pump than any we have ever used. It is one of great power, and well adapted for ship's decks, mines, factories, greenhouses, graperies, etc. *The Mining Chronicle and Railway Journal* says: 'It is recommended for its extreme simplicity of construction, great strength, and consequent durability and cheapness of repair. There is no stuffing-box—the pressure being held by a cup packing, like that upon the working-piston, working in a cylinder, fitted for the purpose within the upper air chamber—which we think a great improvement, as stuffing is so liable to be deranged and leak under strong pressure, to say nothing of the loss by friction, incident thereto. It has also two air chambers; thus the action of the valve is cushioned upon both sides by air—preventing water-hammer and vacuum-thump. The valves are very accessible and simply and cheaply repaired. They work much easier than any pump we have ever seen; the 4-inch cylinder being worked by children in wells 100 feet deep, and as they are extremely cheap, as well as simple and strong, we freely recommend them.'"

"CAMBRIDGE MINE, N. C., June 15, 1863.

"J. D. WEST & Co.—Gents: The Pump which I ordered for our mine is received, and put to work in our underlay shaft, which we are sinking. We find that one man will, with ease, lift 50 gallons per minute. We lifted in three and a half hours all the water in the shaft, which measures seven by twelve feet and thirty feet deep, and it was full when we commenced. It answers our expectations in every respect, and our workmen are highly pleased with it. It will do great service with but trifling expense for repairs.

"Yours, respectfully, BURR HIGGINS."

"This may certify, that I have been using, at my manufactory, for the last four years, 'West's Improved Pumps.' I now have in use three of said Pumps, one of which is kept constantly at work, 24 hours of each day (save Sunday), and has been running for the past two years. I pronounce them, unhesitatingly, the best Pumps that have been brought to my notice, having used many other previously. They are simple in their construction, and not easily deranged.

"N. Y., Oct. 10, 1859. JAS. A. WEBB."

We have plenty more such certificates, but think these are enough. For Pumps, Hose, Pipe, etc., address or call upon

J. D. WEST & CO., 40 Cortlandt st., New York.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway

EDDY'S

Kerosene Cooking & Heating

STOVES AND RANGES.

THESE COOKING STOVES WILL

☞ *Bake, Boil, Stew, Fry and Roast,*

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only Kerosene Stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt saving and heat-saving institution is EDDY'S PATENT KEROSENE STOVE. Taking the cost of running it, and the result attained, it is the best patent in the market."—*Worcester Daily Spy.*

Our Heating and Cooking Stoves are very convenient and economical, especially where a fire is required but a few hours at a time.

Orders for Stoves may be sent through American Advertising Agency, 389 Broadway, New York.

LESLEY & ELLIOT,

Manufacturers, No. 494 Broadway, New York.

Send for Illustrated Circular. (136

KNITTING MACHINES

FOR

Families and Manufacturers,

☞ *Something New and Invaluable for Family Use.*

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space—is portable and can be attached to a stand or table, weighs about 40 lbs.

It will knit a variety of Stitches—the breakage of needles is trifling—the cost of needles is insignificant and the most delicate material can be knit pure and spotless, as the needles are not oiled.

Orders for Machines may be sent through the American Advertising Agency,
389 Broadway, N. Y.

Send for a Circular—Agents wanted.

DALTON KNITTING MACHINE CO.,

137] 537 Broadway, N. Y.

WEED'S

HIGHEST PREMIUM

Shuttle Sewing Machine

Has only to be seen and operated to be Appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread, (such as is usually found at stores,) and various kinds of fabric, which you know the former most popular Sewing Machines either cannot work at all, or, at best very imperfectly.

SUPERIORITY.

over any other Machine in the market will be seen at a glance.

1st It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d, No imperfect action of the feed at uneven places in the work.

4th. The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 200 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining; thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance. it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Below we give a few prices:

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Half Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

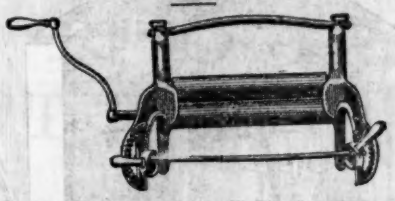
WEED SEWING MACAINE Co.,

136) 506 Broadway, New York.

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog-wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day.

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*
That a *simple* machine is better than a complicated one.
That a Wringer should be *self-adjusting, durable, and efficient.*
That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.
That wood soaked in water will *swell, shrink,* and *split.*
That wood-bearings for the shaft to run in *will wear out.*
That the Putnam Wringer, with or without cog wheels, will *not tear the clothes.*
That cog-wheel regulators are not essential.
That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.
That all who have tried it pronounce it the *best* Wringer ever made.
That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and *any* others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January*, 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any*, to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.
Sample Wringers sent, express paid, on receipt of price.
Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,
13 PLATT STREET, New York,
BENNINGTON, Vt.,
CLEVELAND O.

WATER AND GAS PIPE.

The Boston Bituminized Pipe Company,

Are now manufacturing and prepared to take orders, for their PATENT PIPE, (from 2 to 12 inches in diameter,) as a substitute for Iron, Copper, Lead, &c., for the conveyance of WATER, GAS, SEWERAGE, &c. &c.

From the testimonials received, and the entire satisfaction it has given those having it in use, we feel warranted in claiming for this pipe over that of any other, the following advantages, viz:

It is much CHEAPER—has great strength (it having been tested to 500 lbs. to the square inch,) combined with LIGHTNESS, costing less for transportation; the joints are easily made and perfectly tight; it does not expand or contract from different degrees of temperature, and is free from *CORROSION* or *CONCRETIONS* forming; does not impart any taste or injurious properties to water, and as far as anything can be said to be indestructible, we deem this to be.

As a GAS PIPE, we say it has no superior. The Lowell Gas Light Co., purchased and laid some of this Pipe last year, and have likewise subjected samples to a test of four month's duration in their dry lime purifiers, with the most satisfactory results, in fact establishing beyond a doubt, its perfect adaptation to the wants and requirements of Gas Companies, specimens of which, together with the statement of O. E. Cushing, Esq., Agent Lowell Gas Light Co., who made these experiments, I shall be pleased to show, and give all other needed information, by applying in person, or by letter, to JOHN L. WEBSTER, Treas.,

Boston Bituminized Pipe Co.,
No. 2 Pearl st. House, Boston.

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AMBROSE SPENCER GILCHRIST,

(LATE CAPT. U. S. V.,)

CIVIL, MINING

AND ARCHITECTURAL ENGINEER,

No. 200 BROADWAY, Office 12.

New York.

New York, April 18th, 1864.

We respectfully invite your attention to and consideration of the justly celebrated and reliable remedy for DYSPEPSIA, HEARTBURN, DEBILITY and PROSTRATION. The Proprietors are proud to acknowledge the unparalleled success which has attended the sale of their valuable preparation, known in nearly every portion of the civilized world as the

"GOLDEN BITTERS."

We risk nothing when we term them a *valuable preparation*, for they are one of the few articles of the present day which are not a humbug; and we are willing and able to satisfy any person or persons who will call upon us, that the celebrated "GOLDEN BITTERS" are a genuine *bona-fide hygienic* article. It is the wish of the proprietors that the virtue of the article be tested before condemning. A decision of their merits by any one who has tried them, is worth a million of purchased bogus testimonials.

For Creating a Healthy Appetite

they are invaluable, and are unequalled as a TONIC. They are mild in their action, and operate by giving *vigor* and *strength* to the system,—not by any change they produce in the solids, but through the medium of the living principle.

They are Purely Vegetable,

being composed of Gentian Root, Calamus, Sassafras, and many other remedial agents of the Vegetable world, all preserved in Jamaica Rum and Sherry Wine.

As a Beverage,

They are the most *wholesome, invigorating* and *palatable* stimulant ever offered to the public. And the fact of their being prepared chemically and scientifically, precludes the possibility of a bitter, unpleasant taste, common to Bitters generally offered for sale. We especially recommend them to Ladies, and particularly to those suffering from

DEBILITY, WEAKNESS, AND PROSTRATION.

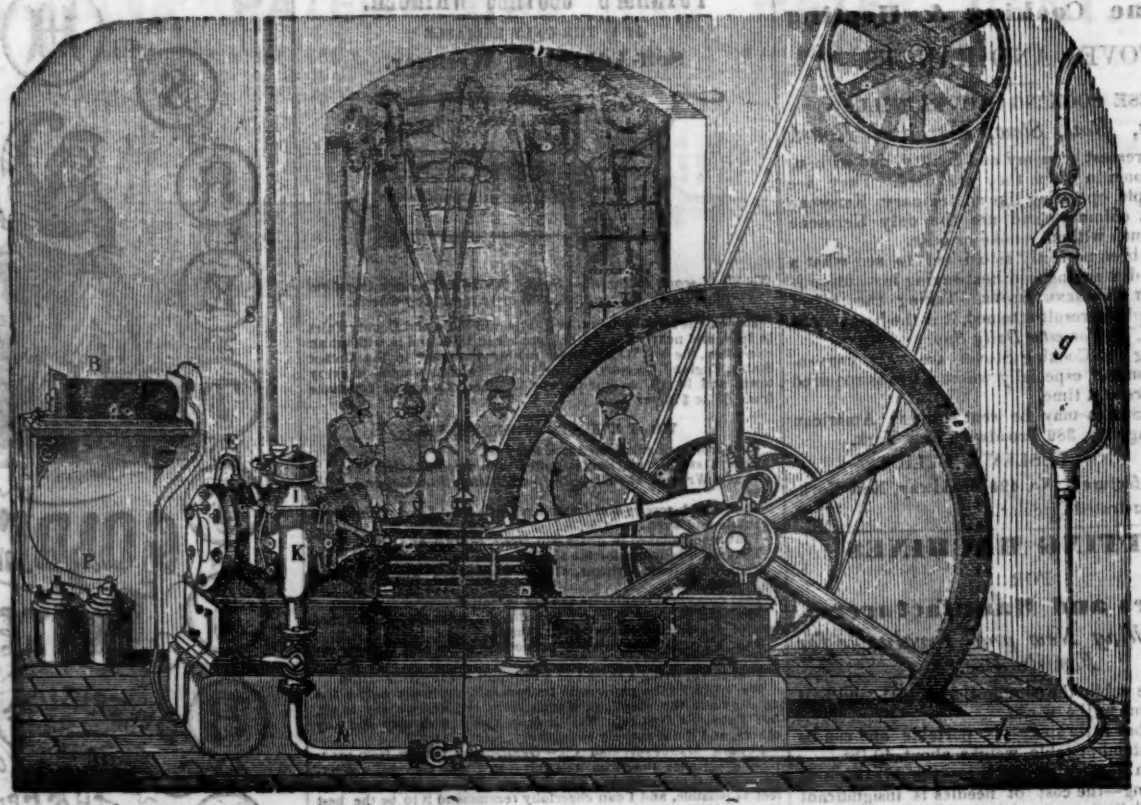
Half a wine glass of these "Bitters" three or four times a day, will produce a remarkable healthy change in persons greatly debilitated.

The "Golden Bitters" have been tried and not found wanting. They are put up in our own *Patent* quart bottles, and for sale by Druggists, Grocers, &c., throughout the world. Each bottle bears a fac-simile of the signature of Hubbel & Co.

GEO. C. HUBBEL & Co, Sole Proprietors

CENTRAL DEPOT, American Exp. Building, New York.

THE GOLDEN BITTERS.—We are not an advocate of stimulants of an alcoholic character; indeed we deprecate this "daily tonic" idea—this "morning toddy" which we see offered in all sorts of shapes as a recuperator, invigorator, revitalizer, &c. As a rule all artificial stimulants are dangerous remedies, and must be taken into the system as you would mercury or arsenic, in very small doses. But we have had an opportunity to try the now well-advertised article known as Hubbel's Golden Bitters, and are frank to say that where the system needs building up, where a stimulant is required to aid nature in restoring a lost appetite and infusing a vigorous action to the debilitated functions, we can recommend these Bitters. Hubbel's Golden Bitters are evidently intended to improve the debilitated human system, rather than to tickle the palate, and are, therefore a harmless and safe remedy to keep in the house.—*New York Weekly Day Book.*



MOTEUR—LENOIR.

LENOIR GAS ENGINE.

This is a horizontal engine, in which a piston, by a connecting rod drives a horizontal shaft.

The gas enters by the pipe "h" from the regulating reservoir "g," (made of vulcanized india rubber,) which regulates the feeding and the branches connected with the gas-pipe.

The tube, K, receives the gas conveyed by the pipe "h," and conducts it to the valve, which opens and closes alternately, by means of a rod moved by an eccentric wheel fastened to the end of the shaft.

Two of Bunsen's piles, P, sufficient to produce the electricity are placed at a little distanc from, and in communication with a Ruhmkorff electric apparatus, B. The electric current of this apparatus is conducted by means of insulated wires to the electricity distributor "m," placed on the front of the frame, while the current of electricity and its arrival at the inflammator, inserted at each end of the cylinder, is directed by the movement of the piston-rod, which, by an ingenious combination, impels a small movable slide before the distributor.

The burnt gas, after having performed its functions in the machine, escapes, by means of a valve, through a pipe, S, and the water designed to cool the interior of the cylinder enters through a double passage, by means of a pipe situated near the escape-valve, and goes out by the pipe, E.

A two horse and a half horse Engine are now in practical operation at the Dry Dock Iron Works, No. 435 East Tenth street, near East River, New York, where they are being manufactured, and those interested are invited to call and examine them.

THE LENOIR GAS ENGINE

Requires no Fire and makes no Smoke,

No Noise, no Dirt, and is thoroughly safe.

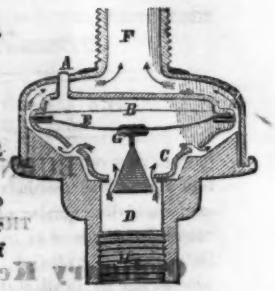
It is propelled by the expansion of Air, dilated by the combustion of Gas within the cylinder, ignited by the

ELECTRIC SPARK

NOTICE TO GAS COMPANIES AND GAS CONSUMERS

THOMPSON'S PATENT GAS CONTROLLER,

The only Self-Acting Gas Controller, Regulator, and Burner Combined which has ever been invented, or known to science.



THE PRINCIPLE UPON WHICH THE THOMPSON'S AUTOMATIC GAS CONTROLLER works is one well known to mechanics, and is simple in its operation.

Within the circumference of a small cylinder below the burner is placed a conical valve attached to a movable diaphragm. The diaphragm rises or falls as the pressure of gas from the pipe is lesser or greater, and the valve acts upon the valve-seat with such regularity of movement that in a difference of from five-tenths of an inch pressure to five inches the variation in flame is hardly perceptible.

The simplicity of its machinery and the nature of the material used in its construction insure its regular action and durability.

In consequence of the uniform quantity of gas which passes the Controller to the burner, there is no waste, and a steady, soft flame is produced, which is important to all who read, write, or work by gas-light. The unsteady flickering blaze which invariably exists when the pressure of gas is beyond the requisition for consumption, has injured the sight of thousands who have been subjected to it.

For street lamps these Controllers are especially valuable, because the pressure varies materially during the night, and in consequence there is a waste of gas, and the light variable.

Improvements have lately been made in the mechanism of the Controller which makes them almost a perfect meter to each burner, and they are now offered to the public with more confidence than ever before.

Reference is permitted to the following named gentlemen—

Col. CHAS. ROOME, President Manhattan Gas Company, N. Y.
C. H. SAND , Esq., President Metropolitan Gas Company, "
J. H. ADAM, Esq., President New York Gas Company, "
PETER COOPER, Esq., Cooper Institute, "
JOHN A. DUFF, Esq., Olympic Theatre, "
GEO. H. KITCHEN, Inspector of Gas Meters, N. Y
A. L. BOGART, Esq., Gas Engineer,
Col. J. A. SABATTON, Engineer Manhattan Gas Company.
Col. A. J. WHITE, Engineer Metropolitan Gas Company.
J. K. SIMPSON, Esq., Engineer Cooper Institute.

Persons interested are invited to call at the Office, 111 Pearl street, where they can see the operation by pressure guage and test meters

M. L CALLENDAR, Agent
Office, 111 PEARL STREET.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York.

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

512 WEST TWENTY-SECOND STREET, NEW YORK,
ARCH AND TWENTY-SECOND STREETS, PHILADELPHIA,
No 23 WEST STREET, BOSTON will meet with prompt attention.

HARRIS & BROTHER, PRACTICAL GAS METER MANUFACTURERS,

Continue, as heretofore, at their old Establishment, **No. 1117 CHERRY ST., PHILADELPHIA,** to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞ OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicited, and promptly attended to, by

HARRIS & BRO., No. 1117 Cherry st., Phila.

Messrs. Harris & Brother,

Philadelphia Gas Works, February 14, 1857.

Dear Sirs—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality; the number furnished by you to these works is over 5,000.

JOHN C. CRESSON, Engineer.

Office of the Gas Light Company of Augusta, Ga., March 6th, 1856.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of workmanship and accuracy of registration; they are surpassed by none, and equalled by few manufactories in the Union; we have used meters made by other establishments, but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. HOOKER, Superintendent of the Gas Light Company of Augusta, Ga.

Messrs. Harris & Brother, Philadelphia.

Philadelphia, March 4, 1853.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BERRIMAN & MEARS.

Messrs. Harris & Brother.

March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their correctness. On several occasions I have taken your meters apart, and found the materials used in the manufacture of the same to be as fine quality as used in those imported from Europe, or made by any of the manufacturers in the United States.

Respectfully Yours, GEORGE WIGGAND,
Inspector of GasFittings, Philadelphia

PETROLEUM STOVE COMPANY.

THE KEROSENE OR PETROLEUM STOVE.

BURNING

THE

Ordinary Kerosene Oil,

SUCH AS IS

USED IN LAMPS.

HEAT ROOMS, BAKE, ROAST,

BOIL, FRY,

BROIL, STEW, AND

HEAT FLAT IRONS.

This is the ONLY STOVE yet invented, which burns the common Kerosene, or Petroleum Oil, WITHOUT A WICK and is capable of doing all the COOKING, BAKING, WASHING and IRONING of a large family, as quickly as any coal or wood stove—is neat in appearance, and clean, MAKING NO DIRT OR ASHES—requires no room for stowing wood and coal, a light and portable, and may be used in any convenient place in or out of the house, and is guaranteed to be perfectly safe and free from explosion. This Stove must not be confounded with other Stoves offered under the name of Petroleum Stoves, which do not, and cannot, under any circumstances, burn the ordinary Kerosene, or Petroleum Oil, but burn Naptha, an article as dangerous as gunpowder, in the hands of persons unacquainted with its properties.

☞ This Stove may be seen in operation at the Office of the Petroleum Stove Co., 171 Broadway, Room 12, where Orders will be received, and State and County rights disposed of on liberal terms.

NATHANIEL FORD, Sec'y. *S. T. McDOUGAL, Pres*

GROVESTEEN & CO.,

PIANO-FORTE MANUFACTURERS.

499 BROADWAY, NEW YORK.

The attention of the public and the trade is invited to our New Scale Seven Octave Rosewood Piano-Fortes, which for volume and purity of one are unrivalled by any hitherto offered in this marked. They contain all the modern improvements, French, grand action, harp pedal, iron frame, over-strung bass, etc., and each instrument being made under the personal supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVESTEEN PIANO-FORTE"

Received the highest award of merit over all others at the Celebrated World's Fair!

where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of improvements we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES.

No. 1, Seven Octave, round corners, Rosewood Plain Case, $275.

No. 2, Seven Octave, round corners, Rosewood Heavy Moulding, $300.

No. 3, Seven Octave, round corners, Rosewood Louis XIV, style $325, a fac-simile of the accompaning cut.

TERMS—Net Cash, in Current Funds. Descriptive Circular sent free.